

# On a small collection of Odonata, chiefly collected in Northern India,

by

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The following account is an enumeration of and a short discussion about a small, but interesting lot of *Odonata*, collected by Mrs and Dr W. G. N. VAN DER SLEEN in 1926, during the months of June, July and September, chiefly in the mountain regions of Northern India. I am indebted to Mr J. B. CORPORAAL (Mus. of Amsterdam) for allowing me to examine these dragonflies, as the results proved to be of some interest, especially in dealing with the smaller species.

The localities whence the insects came are situated in the Himalaya mountains, between Simla (2400 ft) and the boundaries of Thibet (Sutlej-basin) and all were captured in the immediate vicinity of the Hindustan-Thibet-Road. Thus, the *Odonata*, gathered together pending geological and ethnological inquiries, descend from a region, known as but little explored; hence all records from these countries are of considerable interest. There are also three species from the extreme South of India, *viz* Travancore ( $10^{\circ}$ ).

In dealing with the *Libellulinae*, I have pleasure in mentioning the assistance of Mr K. J. MORTON (Edinburgh), who was kind enough to explain his views in respect to a remarkable species of *Orthetrum*.

The types and other specimens will be deposited in the Museum of Amsterdam.

## SYSTEMATIC.

Fam. **Lestidae**.Subfam. **Lestinae**.I. ***Lestes cyanea* SELYS 1862.**

*Lestes cyanea* DE SELYS (*Bull. Acad. Roy. Belg.*, XIII, 1862, pp. 51—52)

»      » LAIDLAW (*Rec. Ind. Mus.*, *Calcutta*, XIX, 1920, p. 147 & pp. 158—161, textfig. 6—7, plate V, fig. 8).

1 ♂ ad., Hindustan Thibet Road, Kufri, 8 miles from Simla, 4. VI. 1926 (about 2400 ft).

The only specimen agrees fairly well in all the important characters with the original description, given by DE SELYS, save that in the male appendages the first internal projection of the upper pair is very blunt, while the distal tooth is a sharply pointed spur. (The original definition states that the

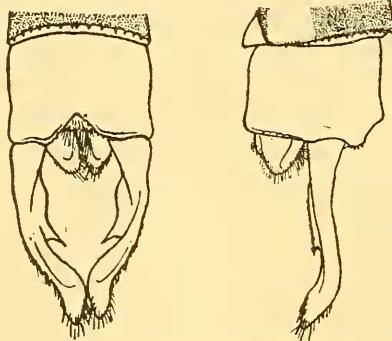


Fig. 1. *Lestes cyanea* SELYS, ♂. Kufri. Appendages, dorsal view and left side.

appendages "ayant intérieurement, après la base, une dilatation qui se termine subitement, après le milieu, par deux dents, la première aiguë" <sup>1)</sup>) LAIDLAW (*loc. cit.*) gives an exact description and good figures of both sexes, accompanied by a photograph of the remarkable, narrow wing-

venation. The male agrees very closely with the series A, described by LAIDLAW as typical *cyanea*, the shape of the appendages, however, being somewhat different to his figure, given on Pl. V. Therefore I have thought it desirable to give another-one; the colour of the superior pair is blue above with black apices (fig. 1). By chance the specimens of which LAIDLAW made his description are from the same locality

<sup>1)</sup> Here, I think, SELYS must have meant "la seconde aiguë".

and taken in May. — Length: abd. 34 + 1.5; hw < 26; pt. 1.7 mm.

Fam. *Agrionidae*.

Subfam. *Platycneminae*.

2. *Calicnemis eximia* SELYS 1863.

*Calicnemis eximia* (Kollar ms), SELYS (*Bull. Acad. Roy. Belg.*, XVI, 1863, p. 16; pars).

- » » SELYS (*Mém. Cour. Acad. Roy. Belg.*, XXXVIII, 1886, p. 96, 131).
- » » SELYS (*Ann. Mus. Civ. Genova*, (2), X, 1891, p. 72).
- » » LAIDLAW emend. (*Rec. Ind. Mus.*, *Calcutta*, XIII, 1917, pp. 327—328 & p. 330, fig. 2).
- » » FRASER (*J. Asiatic Soc., Bengal*, N. S., XIX, 1923, p. 462).
- » » race *atkinsoni*, SELYS (*Ann. Mus. Civ. Genova*, (2), X, 1891, p. 72).

1 ♀ juv., 1 ♀ semiad., Sholtu, 2300 M., 4 miles from Kilba, 1. VII. 1926; 3 ♂♂, 2 ♀♀ semiad., 2 ♂♂, 1 ♀ juv., same locality, 2. VII. 1926.

♂. The abdomen of all semiadult males is entirely scarlet, in accordance with LAIDLAW's notes on this beautiful insect. There is, however, a brownish-red shadow at the base of segm. 9, which occupies about  $\frac{1}{3}$  of the length. It may be possible that in fully mature specimens the small dark markings on the terminal segments become somewhat more perspicuous. In discussing the anal appendages, which are also red, it must be said that the superior appendages are almost as long as the inferior ones, and in this case not in accordance with SELYS' statement *viz* that they are „plus longs que les inférieures” (loc. cit., 1886, p. 131). See fig. 2.

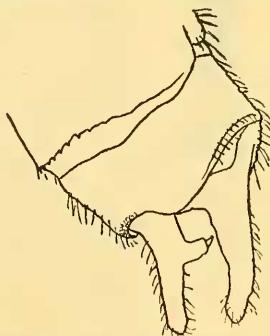


Fig. 2. *Calicnemis eximia* SELYS, ♂. Sholtu. Anal appendages, lateral view.

♀. As compared to the description and figure, given by LAIDLAW and made from a fully matured female, the present semiadult specimens from Sholtu show a much less advanced phase of melanism. Any variation in the markings is due to the more or less teneral condition of the specimens (teste FRASER, loc. cit.). The figure has also been made from a female, on which the development of the markings has not yet terminated (fig. 3).

Subfam. *Agrioninae*.

3. *Ceriagrion cerinomelas* sp. nov.

2 ♂♂, 1 ♀ ad., (one pair taken *in cōp.*). Sholtu, 2300 M., 4 miles from Kilba, 1. VII. 1926. (Segm. 7—10 missing in one male).

1 ♂, 1 ♀ ad. (*in cōp.*). Same locality, 2. VII. 1926.

♂ ad. (Sholtu, 1. VII., androtype). Head yellowish-brown, paler beneath; a rusty brown transverse streak between the eyes on the vertex, running in front about as far as the level of the antennae; epicranium and occiput rusty yellowish-brown. Eyes brown. Prothorax and synthorax of the same ground-colour as the head ("cinnamon-coloured"), fading gradually to pale yellow at the metepimerum, coxae and underneath. Posterior lobe of prothorax rounded, not elevated. Middorsal carina of synthorax finely bordered with rusty brown; two straight antehumeral lines from the same colour and limited fairly distinct. Along the second lateral suture a hardly visible, similar streak; Dorsal view humeral suture with a very small black line. Legs of abdomen. pale yellow, with black spines.

Fig. 3.  
*Calicnemis eximia*  
SELVS, ♀  
semiad.  
Sholtu.  
Dorsal view  
of abdomen.



Wings hyaline. Pterostigma long, with very acute outer angle; greyish with obscured centre. *Ab* rises a trace before level of *Ac* in left front wing and right hind-wing, at level of *Ac* in the other two wings. Antenodals:  $\frac{12 \cdot 12}{\text{---} \cdot 10}$  (left hind-wing partly lost). Abdomen with segments 1—6 and basal half of 7 entirely yellowish-white, without any dark markings;

apical half of segm. 7 marked dorsally and laterally with black; 8—10 black. Seen from the side the black markings on segm. 7, 8 and 10 are as broad as the remaining yellow sides; on segm. 9 the sides are entirely black. Excavation of 10<sup>th</sup> segment and appendages see fig. 4. — The superior anal appendages are darkened, reddish-brown; the lower pair yellowish-white, with black extremities. Length: abd. + app. 32, hw. 21 mm. (two males).

♂ ad. (Sholtu, I. VII., paratype). This male agrees in every respect with the above mentioned type specimen. Unfortunately the terminal segments are broken and lost. *Ab* rises a trace before level of *Ac* in all wings. Antenodals:  $\frac{12 \cdot 13}{11 \cdot 11}$ .

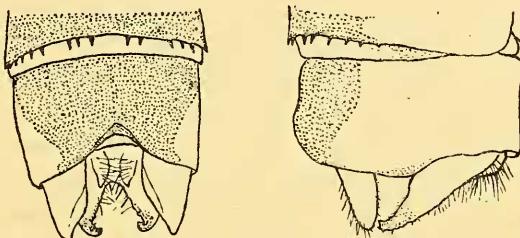


Fig. 4. *Ceriagrion cerinomelas* nov., ♂. Type, Sholtu.  
Appendages, dorsal view and right side.

♂ ad. (Sholtu, 2. VII., paratype). As this specimen differs from the foregoing in some respects, it seems valuable to mention the points of distinction.

Synthorax above uniformly cinnamon-coloured, without indications of rusty humeral and metepimeral streaks. The terminal black marking on segm. 7 narrowed into a very small mid-dorsal line, which is jointed with the small black basal articulation of the same segment. Wings: *Ab* rises a trace before level of *Ac* in the front wings, at level of *Ac* in hind wings. Antenodals:  $\frac{14 \cdot 14}{11 \cdot 12}$ .

♀ ad. (Sholtu, I. VII., gynotype). Head and thorax very similar to male, but uniformly cinnamon-coloured. Legs ochreous-brown; exterior sides of all femora with a diffuse brown line. Wings similar to male, but pterostigma larger and with less acute outer angle; dark-greyish, finely bordered with white. *Ab* rises at the level of *Ac* in all wings.

Antenodals:  $\frac{13 \cdot 13}{11 \cdot 11}$ . Abdominal segments 1—6 cinnamon-coloured with fine black apical rings. Segm. 1 with two brownish vestiges middorsally; 2 with a small, dorsal  $\Delta$ -shaped spot near the end; 3—4 with small dorsal transverse vestiges near its ends, of the same colour; segm. 5 and 6 with a black apical marking above, from about  $\frac{1}{8}$  of the length of the segment. Dorsum of 7—10 black, save for a very small, enclosed, yellow spot near the distal end of the lateral black portion of segm. 8, a similar, but larger spot at the sides of segm. 9 and exceedingly fine yellowish basal rings. Sternites of segm. 2—7 wholly black, of segm. 8 only in the middle, blue powdered. Appendages blackish; valves yellowish. Length: abd. + app. 33; hw. 23.5 mm.

♀ (Sholtu, 2. VII., paratype; probably not fully adult). Very similar to the above described female. There are, however, the following differences: segm. 2—5 with a very diffuse transverse vestige near the ends; the apical marking on the dorsum of segm. 6 reduced to a small, blackish spot, flowing out to the front. Near the apex, the lateral black marking on segm. 8 approach to nearly enclose a spot of the ground-colour; on segm. 9 this spot is enclosed and on segm. 10 there is also a trace of a yellowish lateral spot. Sternites of segm. 2—7 blackish, not powdered with blue. Wings: *Ab* rises before the level of *Ac* in all wings (for about half the length of *Ac* itself). Antenodals:  $\frac{13 \cdot 13}{11 \cdot 11}$ . Length: abd. + app. > 32; hw. 23 mm.

This species is very closely related to *C. melanurum* SELYS, from which it differs — apart from its considerable size — chiefly in the shape of the appendages of the male and in the bicolorous abdomen of the female. Moreover there are still other differences, chiefly with respect to the colour pattern of the head and thorax, by which *C. cerinomelas* will prove to be easily recognizable from *melanurum*. It is obvious that the point of origin of *Ab* at level of *Ac* is not merely an unserviceable characteristic in defining the genus *Ceriagrion*, but also that it is variable within the limits of individual variation. In discussing the species of

*Ceriagrion*, LAIDLAW has already pointed out this peculiarity with regard to *C. melanurum* (Rec. Ind. Mus., Calcutta, XVI, 1919). I think, however, *cerinomelas* must take its place in the group *melanurum-fallax*, against such species as *erubescens*, *coromandelianum*, *cerinorubellum* etc. See also RIS (Entom. Mitteil., III, 2, 1914), who has given an excellent description and a figure of the male appendages of *C. melanurum*; and cf. also RIS (Abh. Senckenb. Ges., 34, 1913, pp. 519—520).

#### 4. *Ischnura forcipata* MORTON 1907.

*Ischnura forcipata* ♂ MORTON (*Trans. Entom. Soc. London*, Sept. 1907, p. 306, pl. XXIV, figs. 1, 2, 3).

» » ♂ LAIDLAW (*Rec. Ind. Mus., Calcutta*, XII, 1916, pp. 129—130 et *Idem*, XVI, 1919, pp. 171—174).

» *musa* ♂ BARTENEV (*Revue Russe d'Entom.*, XIII, 1913, No. 1, pp. 187—189, figs; in Russian). Teste MORTON (*in litt.*) very probably same species.

» *gangetica* ♂ LAIDLAW (*The Entomologist, London*, 1913, p. 235, text-fig.).

1 ♂ juv., 4 ♂♂ ad., 2 miles up Sutlej River from Ram-pur, 19. VI. 1926; "swampy land near tributary rivulet".

3 ♂♂ ad., 1 ♀ juv. (heteromorphic), Sholtu, 2300 M., 4 miles from Kilba, 1. VII. 1926.

A beautiful series of this most interesting species. For the greater part the specimens, which are kept in acetic-ether atmosphere, are discoloured, but I can not find any difference between the exact description and figures of the male appendages, given by MORTON, and the present examples. The shape of the anal appendages and the most remarkable form of the pterostigma in front and hind wings, are sufficient characters to identify this species with certainty. Unfortunately the only female specimen was just emerged when it was captured. The appearance of the insect has suffered under this circumstance in such a manner, that I am not able to give a good figure of the prothorax.

♀ (*adhuc ignota*). Heterochromatic. All parts of the mouth yellowish-orange. Genae and frons as far as base of antennae

pale orange, including the two first joints of the antennae. Between the eyes a transverse black band, including the ocelli; on the superior portion of the frons, this band has in the middle a small rectangular projection. Epicranium and occiput largely orange (postocular spots "not enclosed"). Eyes dark brown. Prothorax yellowish, with some black markings on the pronotum and a black streak along the margin on each side of the lateral lobes. Posterior margin slightly elevated; middle lobe yellowish, strongly erected vertically, forming a sub-acute lobe, larger and more pointed than in the male. Seen from behind, this lobe is hollowed, forming an almost equilateral arch. Synthorax pale orange. Along the blackish dorsal carina a small brownish band from about  $\frac{1}{4}$  of the breadth of the mesepisternum; on each side this band is finely bordered with reddish-brown. Humeral suture finely black. Thorax laterally pale orange, without any dark markings. Legs pale yellow, with black spines.

Abdomen pale yellowish. Dorsum of segm. 1 with two very small blackish spots at base; segm. 2 with a very fine longitudinal line from end to end, crossed by a short transverse line in the middle of the distal half of the segment. Basal  $\frac{1}{6}$  part of segm. 3 pale yellowish above, with a fine longitudinal line, connected in front with the apical suture of segm. 2 and attached behind to the bronzed green dorsum of the remaining part of the segment. Segm. 4—8 bronzed green dorsally; segm. 4—6 with a very narrow basal ring of white. Segm. 9 with two convergent dorsal markings from the same colour; segm. 10 and appendages yellowish-white.

Venation of the wings yellowish-white. Front wing with 8 postnodals. Pterostigmata whitish, not differing in front and hind wings, and almost equal in length; in front wing normal, nearly diamond-shaped, with rounded distal corner; pterostigma in hind wing a trace higher than in front wing.  
— It is impossible to give exact measurements of this female.

This species was originally described from Quetta. Later on it was re-discovered in Kumaon by LAIDLAW, who remarks: "Range probably restricted to the foot hills of the west and central Himalaya". (l. c., 1916). BARTENEF records it from Bukhara.

Fam. **Libellulidae.**Subfam. **Libellulinae.**Tribe **Libellulini.**5. **Orthetrum aniceps** SCHN. 1845.

2 ♂♂, ad., Sholtu, 2300 M., 4 miles from Kilba, 2. VII. 1926.

The two adult males of this mediterranean species are somewhat greater than specimens from Quetta, VI, recorded from MORTON and also mentioned by RIS (Coll. SELYS, Libellul., X, p. 187), but for the rest, they fully agree with the descriptions. The occurrence of this species also in the Himalayas is very interesting; possibly *O. aniceps* reaches in this country its utmost eastern limit.

Both specimens have thorax and abdomen entirely pruinose. Wings hyaline; pterostigma ochreous yellow; membranula light-gray, unicolorous.

Length: abd. + app. 28.5, hw. 30, pt. 3 mm.

6. **Orthetrum lusonicum** BRAUER 1868.

1 ♂ semiad., 1 ♂ ad., 2 miles up Sutlej River from Rampur, 19. VI. 1926; "swampy land near tributary rivulet".

♂ semiad. Head and thorax flesh-coloured yellow, with no trace of a greenish tint. Frons with a very narrow black basal line. Black markings on synthorax as follows: dorsal carina, two distinct straight antehumeral stripes and a smaller humeral suture deep black. No darkening between humeral and antehumeral stripes. Second lateral suture finely bordered with black. Wings entirely hyaline; pterostigma short, yellowish, in front heavily bordered with black. Membranula cinereous, whitish at base and near its end. Antenodals:  $\frac{13 \cdot 13}{10 \cdot 10}$ .

Two rows of cells between *Rs* and *Rspl*. Abdomen: first segments flesh-coloured, with complete lateral black bands and a black patch at the sides of 2<sup>nd</sup> segment near the genitalia; sutures black. Segm. 3—9 pruinose. Length: abd. + app. 27.5, hw. > 30, pt. 3 mm.

♂ ad. Head coloured as in the foregoing male. Thorax pruinose, but the black markings are still visible, arranged as in the younger male; moreover there are vestiges of two

straight dark bands on the mesepimerum as well as on the metepisternum. Wings as in the younger male. Antenodals: 12 . 12. Two rows of cells between *Rs* and *Rspl*. Abdomen 9 . 9. Heavily pruinose. Genitalia of both specimens differing considerably from typical oriental *luzonicum*. Less prominent; lamina anterior not distinctly bend forward. Hamule with apex bifid, viewed from the side the internal branch more prominent than the external, thick at base, triangular near its end with rounded apex. External branch twice much broader, somewhat lamellar, apex broad, truncate. Genital lobe as in typical *luzonicum*. Length: abd. + app. 28, hw. 31, pt. 3 mm.

Mr MORTON, who kindly determined these two specimens, informed to me, that he can not find that they differ in any important respect from a series of *luzonicum* in his own collection, taken in several parts of India, as Gujarat, Coorg, Assam and Ceylon; MORTON also states, that the fig. of the male genitalia in RIS' monograph (Libellul. X, fig. 144), made from a Javan example, does not agree too well with most of these, but he believes both these and the two actual specimens still represent the same species — it is true in a somewhat modified form.

#### 7. *Orthetrum triangulare triangulare* SELV. 1878.

2 ♂♂ ad. (mutilated), 1 ♀ ad., between Kotgark and Kepu, 1850 M., 13. VI. 1926; "one pair in cōp. on slope". 3 ♂♂ ad., 1 ♀ juv., Sholtu, 2300 M., 4 miles from Kilba, 2. VII. 1926.

The specimens give no rise to ample discussions. Abdomen of the males pruinose; wings, apart from the basal spots, hyaline. *ti* in front wing: 3.3 (2 ♂♂), 4.4 (2 ♂♂), 4.3 (1 ♂). In the adult female the wings are entirely yellowish, with smoky tips. *ti* in front wing: 2.2 and 5.6. Length: ♂ abd. + app. 30, hw. 29; ♀ abd. + app. 31, hw. 29 mm.

#### 8. *Orthetrum pruinosum neglectum* RAMB. 1842.

1 ♂ ad., 1 ♀ juv., 2 miles up Sutlej River from Rampur, 19. VI. 1926; "swampy land near tributary rivulet."

1 ♂ ad., Travancore, S. India, Lake Peryar, 21. IX. 1926.

9. *Orthetrum japonicum internum* MC LACHL. 1894.

1 ♂ ad., 2 miles up Sutlej River from Rampur, 19. VI. 1926; "swampy land near tributary rivulet".

1 ♂ ad., 2 ♀♀ ad., Upper Hindustan-Thibet-Road, from Gaura to Sarahan, 23. VI. 1926 (one pair *in cop.*).

From this beautiful *Orthetrum* four specimens are present. The males have the colours so excellently preserved, that it seems of value to give a short description of them.

♂. Vertex and epicranium blackish-brown. Frons orange; sides of the frons, postclypeus, anteclypeus and genae yellowish-gray. Labrum and lateral lobes of labium bright orange; medial lobe of labium black. Eyes chestnut above, fading to blackish-brown laterally; occipital triangle darkbrown. Prothorax black; hind margin pale yellowish-green. Mesepisternum and ante-alar ridge of synthorax pale yellowish-green above, velvet-brown at the sides, bounded by a darker brown humeral line. Dorsal carina powdered with blue, like as meso- and metanotum (inter-alar spaces). For the rest thorax laterally fully covered with a bluish-white pruinescence, except small parts below, which are yellowish-brown. Legs black; coxae, trochanters and inner portion of first femora brown. Wings hyaline, with a slight smoky tinge near the apex; the same very densely reticulated. Hind wings only with the faintest tinge of yellow at extreme base. Pterostigma small, dark brown; membranula gray. Antenodals:  $\frac{12 \cdot 11}{9 \cdot 10}$  and

$\frac{13 \cdot 14}{11 \cdot 11}$ . Cross-veins in *t*:  $\frac{1 \cdot 0}{0 \cdot 0}$  and  $\frac{1 \cdot 1}{1 \cdot 1}$ . Front wings with 3 cells in *ti*. Dorsal surface of abdomen entirely and very densely powdered with bluish-white. Segm. 10 and appendages black. Ventral side greyish-brown, sutures largely black; tergites sparsely pruinose.

Length: abd. + app. 27, hw. 33, pt. hw. 2.8 mm.

♀. In general the two females are similar to the males, but there is no trace of pruinescence on the body. Ground-colour of the thorax and abdomen dull greenish-olive, with brownish antehumeral lines, greyish-white meso- and metepimerum and very broad, black longitudinal bands on segm. 1—10 of the abdomen. The considerable breadth of the

abdomen, the large black markings at the sides of it and the dilatation of segm. 8, are very striking. Wings hyaline, densely reticulated, basally tinged with yellow as in the male.

Antenodals:  $\frac{13 \cdot 14}{10 \cdot 10}$  and  $\frac{14 \cdot 14}{9 \cdot 10}$ ; cross-veins in  $t$   $\frac{2 \cdot 2}{1 \cdot 1}$  and  $\frac{1 \cdot 1}{1 \cdot 1}$ .

Length: abd. + app. 27, hw. 34, pt. hw. 2.8 mm.

#### Tribe *Palpopleurini*.

##### 10. *Palpopleura sexmaculata* FABR.

1 ♂ semiad., 2 miles up Sutlej River from Rampur, 19. VI. 1926; "swampy land near tributary rivulet".

The actual specimen, a single male, seems to be not fully adult, for it has the abdomen sparsely powdered with blue, the light ground-colour resting visible. The body of the adult insect has been described by FRASER (Journ. Bombay Nat. Hist. Soc., XXVI, 1919) as: "pale sky blue, the sides of first two segments pale yellow and the dorsum of the first brownish".

Mr FRASER has also fixed the following interesting remarks on the habits of this beautiful insect: "The imago has a low circling flight, often coming to rest on heads of grasses and by reason of its yellow colour, looks exactly like a hymenopterous insect. Its flight is best likened to that of a Burnet moth (*Zygaena filipendulae*). After the male has developed blue pruinescence this resemblance is lost, as the blue is very conspicuous during flight. Breeds in marshes and shallow ponds". (Rec. Ind. Mus., Calcutta, XXVI, 1924, p. 434). It has its nearest relatives in Africa and Madagascar.

#### Tribe *Sympetrini*.

##### 11. *Acisoma panorpoides panorpoides* RAMB. 1842.

7 ♂♂, 5 ♀♀, 2 miles up Sutlej River from Rampur, 19. VI. 1926; "marshy land near tributary rivulet".

Several examples of this common and widely distributed species are still very young; in these specimens the markings on thorax and abdomen are not yet distinctly perceptible.

**12. *Crocothemis erythraea erythraea* BRULLÉ 1832.**

nec *Crocothemis erythraea* (Br.), MORTON (*Entom. Monthl. Mag.*, V, 1919, 3<sup>rd</sup> ser., pp. 186—187).

nec *Crocothemis erythraea chaldaeorum* subsp. nov., MORTON (*Idem*, V, 1920, 9<sup>th</sup> ser., pp. 298—300, pl. XIV, figs. 1, 2 (3)).

nec *Crocothemis servilia servilia* (Dr.), var. *erythraea* nov., FRASER (*J. Bombay Nat. Hist. Soc.*, XXVI, 1919, p. 517).

4 ♂♂ ad., 2 miles up Sutlej River from Rampur, 19. VI. 1926; “swampy land near tributary rivulet”.

♂. Colour of the entire insect red, without any dark or black markings on any part of the body whichever. Wings hyaline, reticulation close, but not mainly at the apices; an amber coloured, basal marking which in the front wing is only present in the extreme basal portion of the subcostal and cubital spaces, in the hind wing this marking reaching as far as the first antecubital nervure, halfway between the cubital nerve and the triangle and from thence in a convex margin nearly as far as the anal angle. Antecubital nervures  $10\frac{1}{2} \cdot 10\frac{1}{2}$ . Apices of wings hyaline. Pterostigma deep orange, 8 . 8

heavily bordered with black. Discoidal field always beginning with a row of 3 cells, in two specimens occasionally with 2 cells in the middle of the field.

Length: abd. + app. 22, hw. 26 mm. (1 ♂, alcohol specimen); 23, 27 (2 ♂♂); 24, 28.5 mm. (1 ♂). Pterostigma in hind wing 3.5 mm.

Without any doubt the actual specimens must be referred to *C. erythraea* BRULLÉ. MORTON (*loc. cit.*, 1920) has given excellent photographs, made from preparations of the 2<sup>nd</sup> abdominal genitalia of the male, by help of which the two related species, *viz* *C. erythraea* and *servilia*, can be separated. The shape of the hamules, in all the present specimens, is identical with MORTON's figure 3 on pl. XIV, made from a Madagascan male of *erythraea*. Seen under the microscope the tooth at the inner branch of the hamule is easily recognizable. Save for the extension of the basal markings on

the wings, I can not find important differences between the Rampur specimens and males from Algeria.

I do not know why FRASER (*loc. cit.*, 1919) has referred a "yellow variety *erythaea*" (not spelled *erythraea* there) to *C. servilia*, for this "variety" apparently represents a modified form of *erythraea* from Southern Europe, Egypt and Africa, as FRASER states himself (p. 517). Although his views on the subject are most interesting with regard to the mutual close relationship between the several forms, and in spite of his reservation that his division is a purely artificial one, I can hardly believe that his var. *erythaea* in every respect is equivalent to European or African specimens of *C. erythraea*; e.g. specimens, which I have seen from Southern France and Algeria are as red as the actual males from Rampur. MORTON's investigations (1920) have proved that there can be made a disintegration, based on morphological structures.

### 13. *Neurothemis tullia tullia* DRURY 1773.

2 ♂♂ ad., 1 ♀ ad., Travancore, S. India, Lake Peryar, 21. IX. 1926.

### 14. *Neurothemis fulvia* DRURY 1773.

3 ♂♂ ad., Travancore, S. India, Lake Peryar, 21. IX. 1926.

The three present males are not quite typical with regard to the extension of the reddish brown wing markings: the apices of the wings are strongly marked, as far inwards as the outer end of pterostigma. Accordingly there is a hyaline space between the dark apices and the margin of the main tint of the wings. The specimens agree very well with FRASER's description of specimens from Bombay, Madras, Calcutta and Burma (*J. Bombay Nat. Hist. Soc.*, XXVI, 1919, pp. 509—510).

The size is very variable. Length: abd. + app. 22, hw. 27, pt. 3.5 (1 ♂); 27, 33, 4.5 (2 ♂♂).

#### Fam. *Aeschnidae*.

#### Subfam. *Cordulegasterinae*.

### 15. *Cordulegaster brevistigma* SELVS 1854.

1 ♀ ad., Hindustan Thibet Road, Kufri, 8 miles from Simla, 4. VI. 1926.

2 ♂♂ ad., Hindustan Thibet Road, Kotgark ( $\frac{48}{5}$  from Simla),  
 2300 M., 12. VI. 1926. 1 ♂ ad. Upper Hindust. Thibet Road,  
 from Gaura to Sarahan, 23. VI. 1926.

Subfam. Aeschninae.

16. **Anax guttatus** BURM. 1839.

1 ♀ ad., Sholtu, 2300 M., 4 miles from Kilba, 2. VII. 1926.  
 1 ♂, 5 ♀♀ (nymphal skins); same locality and date. ("Very  
 numerous along small pool").

The only female agrees in most respects with typical *A. guttatus*; as, however, the anal appendages are lost, the identification remains somewhat doubtful. The following remark on the colours is from Mrs VAN DER SLEEN's notes on the living insect: — "Clypeus and frons green; thorax entirely lightgreen; abd. segm. 1 and 2 bluish, for the rest brown, with greenish spots". The exuviae are, undoubtedly, referable to the same species.